

AMENDMENTS TO THE DRAWINGS:

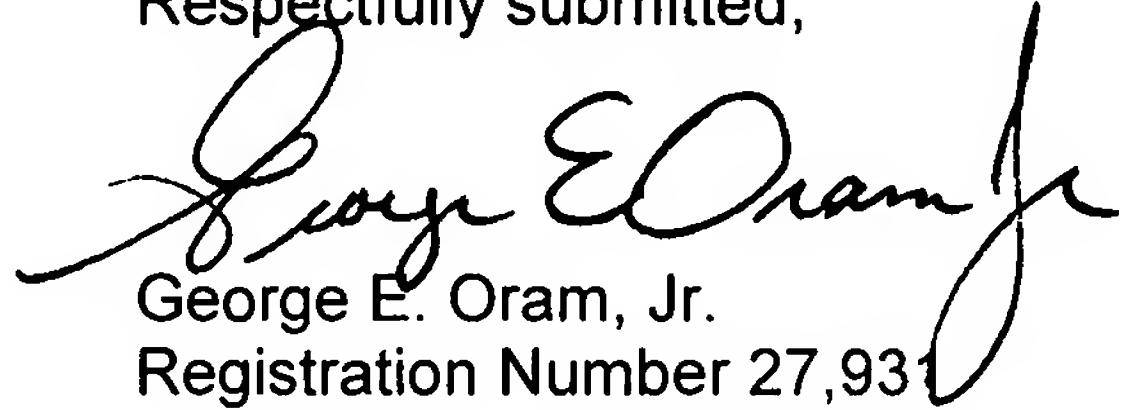
The attached annotated drawing sheet and replacement drawing sheet include changes to Figure 6. The replacement drawing sheet replaces the originally filed Figure 6.

REMARKS

The Application is amended to correct errors noted therein. Claims 1 and 2 are cancelled and replaced by Claims 3 and 4. By this Amendment, a Substitute Specification, Abstract and corrected drawings are submitted to place this application into better condition for examination. It is respectfully submitted that no new matter is contained in the Amendments.

Please charge any fee deficiency or credit any overpayment with respect to this paper to Deposit Account Number 01-2300.

Respectfully submitted,



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Enclosures: Marked-Up Specification (17 pages)
 Substitute Specification (10 pages)
 Marked-Up Copy of the Abstract (2 pages)
 Clean Copy of the Abstract
 Annotated Drawing Sheet and Replacement Drawing Sheet – Figure 6 (2 sheets)

BUILT-IN WALL WATER PANEL SERVICE BOX**Technical Field**

5 The present invention relates to a ~~water field box to be hidden in wall~~built-in wall water service boxes and, more particularly, to a ~~water field box to be hidden in wall~~ including a case having a flexible hose for connecting a soft duct and a water field inside, and a plate for opening/closing the case; ~~wherein~~built-in wall water service box, which includes a case, having a flexible hose, which couples a soft pipe to a water tap, and a
10 cover plate which openably closes the case, and in which the flexible hose is coupled to the ~~soft~~at a first end duct protected by a flexible (bellow) pipe through a socket having different diameters at one end and also coupled to the water field at the other end, the opening/closing thereof to the soft pipe, which is covered with a bellows pipe, using a first reducing socket, and coupled at a second end thereof to the water tap, and the cover
15 plate has a frictional protrusion and a hole for repairing the plate, and a flange member around outline of the hole to be opened/closed by an opening plate, ~~the~~thereon and a repair hole therein, with a rim part provided on the cover plate around an edge of the repair hole, so that an openable plate is ~~socket~~ having different diameters is for inserting and fittingremovably coupled to the rim part, and in which a second reducing socket,
20 which is coupled to a connection pipe of the water tap, is inserted into a socket insertion port formed at a predetermined position through the openable plate and maintains a position thereof using a stop protrusion, which is provided at a predetermined field and coupled to the opening plate through a port for inserting the socket and a threshold, both being formed on a part of the opening plate, and, at the same time, coupled and integrated withposition on the openable plate, and the second reducing socket is
25 integrally coupled to the second end of the flexible hose.

Background Art

30 Generally, when new buildings such as house or apartment are constructed or old buildings are under extension working, cold/hot water pipes from outdoor are guided

into a distribution device installed at bottom side of a sink, or in a built-in chest of drawers or dress room or the like, which is, in turn, connected to each buildings, such as residential buildings and apartment buildings, are constructed, or old buildings are renovated, cold and hot water pipes are guided from the outside to a distribution box, previously installed below a vanity sink, near built-in furniture, or at a predetermined position in a dressing room. of places requiring the water such as toilet, bathroom, boiler room and/or multi-purpose place.

Herein, in consideration of a cold/hot water pipeline leading to each of the places in demand from the distribution device, a pipe passes through inside of a Zebra-type pipe protection housing with a bent member on outer side thereof and through the floor of a room or a living room as encased by the housing, then goes to a toilet or a bathroom, by connecting each of the water field boxes mounted at an entrance of each room by means of connection pipes in order to supply cold/hot water to the bathtub, the washstand, the toilet bowel and so on.

Such conventional way to bury the water field box into floor has a difficulty to repair the water field box, more particularly, involves disadvantages that it is difficult to visibly monitor the cold/hot water pipeline or the water field box hidden in the floor when there is a damage and/or a water leakage of the cold/hot water pipeline or the water field box, then it should require to dig out and excavate the floor and look into the pipeline or the box in detail and, after completing the examination, the pipeline or the box must be buried again in the floor.

Therefore, it is recently proposed a method that directly encloses the water field box in a wall adjacent to a desired place such as the toilet or the bathroom, instead of the conventional method for hiding the water field box in the floor or ground. Furthermore, the cold and hot water pipes extend to desired locations, for example, a bathroom, a boiler room, a multi-use room, etc.

Herein, each of the cold and hot water pipes, which are connected to desired locations from the distribution box, has a structure in which a flexible inner pipe is inserted into a corrugated cover pipe, which is a bellows pipe. The cold and hot water pipes having the above-mentioned structure are supplied to water service boxes of

desired locations, such as a bathroom, a multi-use room, etc., through floors of rooms and the kitchen. Connection pipes are connected to the water service boxes which are installed at the desired locations, thus supplying cold and hot water to cold and hot water lines of a bathtub, a washstand and a toilet.

5 However, in the conventional piping system, it is difficult to repair the piping system after the construction of the piping system has been completed. That is, it is difficult to inspect the cold/hot water pipeline or the water service box embedded in the floor when there is damage to and/or water leakage from the cold/hot water pipeline or the water service box. Furthermore, a worker may have to pull up the floor before
10 inspecting the pipeline or the box in detail. After completing the inspection, the pipeline or the box must be embedded in the floor again.

15 Recently, in order to overcome the problems of the conventional method, in which the water service box is embedded in the floor or the ground, a method, in which a water service box is embedded in a wall adjacent to a desired location such as the bathroom, has been proposed.

20 However, the water field box directly encased in the wall service box, directly encased in the wall, has the cold/hot water pipeline passing through an inner space thereof and a connection pipeline between pipelines between multiple water field service boxes which are made of metal or synthetic resin and comprises a have the general form of several pipes, and the pipes are individually separated when it requires examination of the interior condition of the water field service box or repair work thereof, then, after finishing the work, thereto is required, and then, after the work is finished, are combined together in the reverse order.

25 Accordingly, such a water field service box has drawbacks such as inconvenience for working and long time required and need service thereto being inconvenient, taking a long time, and needing a complicated procedure of decomposing dismantling the water field service box during the working process and of combining again in there assembling it again in reverse order.

Accordingly, the present invention has been made keeping in mind the above problems occurring in the prior art, and an object of the present invention is to provide a built-in wall water service box, which includes a case, having a flexible hose, which couples a soft pipe to a water tap, and a cover plate which openably ~~The present~~
5 ~~invention relates to a water field box to be hidden in wall including a case having a flexible hose for connecting a soft duct and a water field inside, and a plate for opening/closing the case (abbreviated to "the opening/closing plate"); whereincloses the~~
10 ~~case, and in which the flexible hose is coupledto the soft duct protected by a flexible bellows pipe through a socket having different diameters at one end and also coupled to the water field at the other end, the opening/closingat a first end thereof to the soft pipe, which is covered with a bellows pipe, using a first reducing socket, and coupled at a second end thereof to the water tap, and the cover plate has a frictional protrusion and a hole for repairing the plate (abbreviated to "the repair hole"), and a flange member around outline of the hole to be opened/closed by anthereon and a repair hole therein,~~
15 ~~with a rim part provided on the opening plate, the socket having different diameters is for inserting and fittingcover plate around an edge of the repair hole, so that an openable plate is removably coupled to the rim part, and in which a second reducing socket, which is coupled to a connection pipe of the water tap, is inserted into a socket insertion port formed at a predetermined position through the openable plate and maintains a field and coupled to the opening plate through a socket inserting port and a threshold, both being formed on a part of the opening plate, and, at the same time, coupled and integrated withposition thereof using a stop protrusion, which is provided at a predetermined position on the openable plate, and the second reducing socket is integrally coupled to the second end of the flexible hose.~~
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Brief Description of the Drawings

The above object, features and advantages of the present invention will become more apparent to those skilled in the related art from the following detailed description for preferred embodiments taken in conjunction with the accompanying drawing,

30 FIG. 1 is an exploded perspective view illustrating a water field box to be

~~hidden in a wall~~built-in wall water service box according to the present invention;

FIG. 2 is a ~~side cross section~~sectional view illustrating the water ~~field~~service box of the present invention;

FIG. 3a is an enlarged view ~~illustrating 'A'~~portion of a circled portion A of FIG 5 2;

FIG. 3b~~4~~ shows an alternative example of flexible hose mounted on the water ~~field~~service box according to the present invention;

FIG. 4 is a view illustrating connection state of a socket having different diameters mounted on the water ~~field~~service box; 5 is a view showing the mounting structure of a reducing socket to the water service box according to the present invention; and

FIG. 5~~6~~ is a view illustrating usage of the water ~~field~~service box according to the present invention.

Best Mode for Carrying Out the Invention

15 ~~The~~Hereinafter, the present invention will be described in more detail ~~be~~with reference to the following embodiments which are presented for purpose of illustration and should not be construed to limit the scope of the invention thereto.~~attached drawings.~~

FIG. 1 representss an exploded perspective view of the water ~~field~~service box to be hidden in the ~~wall~~service box according to the present invention and FIG. 2 shows a side cross sectional view of the box in an assembly form.~~invention.~~ FIG. 2 is a sectional view of the assembled water service box.

Referring to Figures, it would be identified that the water ~~field~~service box 1 according to the present invention comprises a case 2 built with a flexible hose 9 and an opening/closing plate 12 to open/close the hose. ~~the~~the drawings, it will be observed that the water service box 1 according to the present invention comprises a case 2, in which flexible hoses 9 are provided, and a cover plate 12, which closes the case 2.

The flexible hose 9 is jointed to a soft duct 34 as a cold/hot water pipeline at one end thereof and coupled with front end of a flexible bellow pipe 8 enclosing the soft duct for protection thereof through a socket having different diameters 6 and nuts 5 and 7.

Around front outer edge of the case 2, formed are a corner member 3 and several, preferably, four elliptical slots 4 inside the corner member 3 to connect the removable opening/closing plate 12.

Thus, by fitting a fixture 18 through a mounting hole 17 formed on the corner member of the plate 12, the plate 12 is fixed and connected to the case 2. The slots 4 guide a correct point for fixing position to be mounted and a complete connection between the case 2 and the plate 12.

The opening/closing plate 12 is generally made of synthetic resin or metal material, outer surface of which has a plurality of frictional protrusions 19 suitable for applying mortar or tile and inner side of which comprises a repair hole 13 having a desirable dimension such that allows a hand of a user to enter into the repair hole.

Such repair hole 13 is typically formed by cutting out a portion of the plate 12 to obtain a flange member 14 and protruding the flange member 14 outside and is in various forms including, but not limited to, elliptical, rectangular, hexagonal forms and the like. The repair hole is more preferably elliptical in view of appearance and available use.

Additionally, the repair hole 13 of the plate 12 is equipped with alternative opening plate 21 for closing the repair hole 13, which is a little larger than the plate 12 to cover the edge member of the plate 12 when the opening plate 21 closes the plate 12.

On a portion of the opening plate 21, formed is a port 23 for inserting the socket 22 (abbreviated to "the socket inserting port"). Around outer edge of the port 23 a threshold 24 in a protrusion form is formed to be securely coupled and mounted to a connector 11 of the flexible hose 9 through nuts 10 and 20 when the socket 22 is fitted into the opening plate 21. (See FIG. 4 described below).

Further, a mounting hole 16 on bottom portion of the flange member 14 of the opening/closing plate 12 and another mounting hole 25 on bottom portion of the opening plate 21 are faced each other then receive the fixture 26. Thereafter, near a further mounting hole 15 on the flange member 14 of the opening/closing plate 12, matched are both elliptical slots 25' formed on right and left top portions of the opening plate 21. Finally, after setting up an exact position for the opening plate 21 by using the elliptical

~~slots 25', the opening plate 21 is attached and mounted on the flange member 14 of the opening/closing plate 12 by another fixture 26'.~~

~~Herein, since the elliptical slots 25' formed on the right and the left top portions of the opening plate 21 are elliptical and in the elongated slit forms instead of a simple opening structure, after slightly moving the opening plate 21 to the right or left directions to set a fixing point for the exact position as the mounting holes 16 and 25 are assembled together by the fixture 26, a complete assembly is established by fitting the fixture 26' into the elliptical slots 25'. In addition to, finishing caps 27 and 27' are further fitted into the elliptical slots 25' to give a better~~
Each flexible hose 9 is coupled at a first end thereof to each soft pipe 34, which is a cold or hot water pipe. Furthermore, the first end of the flexible hose 9 is coupled to a bellows pipe 8, which covers the soft pipe 34, using a reducing socket 6 and nuts 5 and 7.

A corner member 3, having an elliptical slot 4 therein, is provided at each corner of a front end of the case 2, such that the cover plate 12 is removably coupled to the case 2.

In detail, the cover plate 12 is fastened to the case 2 by tightening a locking member 18 both into each locking hole 17, which is formed in each corner of the cover plate 12, and into each elliptical slot 4. At this time, the position of the cover plate 12 is precisely adjusted using the four elliptical slots 4 formed in the corner members 3 before completing the process of coupling the cover plate 12 to the case 2.

The cover plate 12 is made of synthetic resin or metal. The cover plate 12 has on an outer surface thereof a plurality of frictional protrusions 19 such that mortar or tile can be applied to the cover plate 12. A repair hole 13, having a size appropriate for a user to put his/her hand into the repair hole 13, is formed at a predetermined position through the cover plate 12.

The repair hole 13 is typically formed by cutting out a portion of the cover plate 12 and by protruding a rim part 14 from an inner edge of the cover plate 12. Furthermore, the repair hole 13 may have an elliptical shape, a rectangular shape, or a hexagonal shape, etc., that is, it is not limited to any particular shape. The repair hole 13 is more preferably elliptical in view of appearance and practicality of use.

Additionally, an openable plate 21, which is slightly larger than the repair hole 13 so that the edge of the repair hole 13 can be covered by the openable plate 21 when closing the repair hole 13, is attached to the repair hole 13 of the cover plate 12.

On portions of the openable plate 21, ports 23 for the insertion of reducing sockets 22 (abbreviated as "socket insertion ports") are formed. A stop protrusion 24 is provided around the edge of each port 23, so that each reducing socket 22 is securely coupled to a connector 11 of each flexible hose 9 using nuts 10 and 20 after the reducing socket 22 is fitted into the openable plate 21. (see the following description related to FIG. 5).

Further, the openable plate 21 is placed on the rim part 14 of the cover plate 12 such that a mounting hole 16 in a lower portion of the rim part 14 of the cover plate 12 and another mounting hole 25 in a lower portion of the openable plate 21 are aligned with each other, and a locking member 26 is inserted into the mounting holes 16 and 25. Thereafter, elliptical slots 25' formed at right and left upper portions in the openable plate 21 are aligned with respective mounting holes 15 formed in the rim part 14 of the cover plate 12. Finally, after setting the exact position for the openable plate 21 by using the elliptical slots 25', the openable plate 21 is attached and mounted on the rim part 14 of the cover plate 12 with locking members 26'.

Herein, since the slots 25' formed at the right and left upper portions in the openable plate 21 are elliptical rather than circular, after slightly moving the openable plate 21 in the right or left direction to determine the exact setting position thereof in a state in which the mounting holes 16 and 25 are assembled together with the locking member 26, assembly is completed by fitting the locking member 26' into the elliptical slots 25'. In addition, finishing caps 27 and 27' are further fitted into the elliptical slots 25' to improve the appearance thereof.

Next, after fitting a connection pipe 29 having a cover 28 into the socket 22 to connect together, a water field 33 is coupled to the connection pipe thereby to complete the water field box 1 having the water field 33 hidden in the wall. Subsequently, a connection pipe 29 having a cover 28 is fitted into each reducing socket 22, and a water tap 33 is coupled to each connection pipe 29 to complete the built-in wall water service

box 1 having the water taps 33 according to the present invention.

Referring to FIG. 2, the water field box 1 hidden in the wall according to the present invention is installed inside the wall 30, and comprises a soft duct 34 coming from lower portion through the flexible hose 9 having improved flexibility and bending ability and connected to the water field 33 outside the water field box in the water service box 1 of the present invention installed inside the wall 30, in place of a typical rigid pipe made of metal or synthetic material, the flexible hose 9 having improved flexibility and bendability is used for connecting the soft pipe 34, which extends from a lower portion of the wall 30, +, in replace of typical rigid pipe type boxes made of metal or synthetic material.

The soft duct 34 is the cold/hot water pipeline inflowing from the outside and connected to a distribution device mounted on a revetment of a house and/or inside a laminated wall of a building, etc. and outer portion of the soft duct 34 is surrounded by the bellow pipe 8 and inflowing into the water field box 1 through the floor or the wall. The flexible hose 9 is coupled to the opening plate 21 at outlet thereof and connected to the water field 33 to finally receive the cold/hot water.

As described above, the opening plate 21 is fixed and coupled to the flange member 14 of the opening/closing plate 12. As the water field box 1 of the present invention is constructed, the opening/closing plate 12 is firstly jointed to the case 2 by the fixture 18 and top side of the opening/closing plate 12 is applied by mortar 31 then covered with tiles 32. Next, the opening plate 21 is coupled to the prepared plate 12 to complete the water field box assembly 1.

Herein, on the top side of the opening/closing plate 12, formed are a preferable number of frictional protrusions 19 having desired dimension sufficient to prevent the mortar 31 coating the opening/closing plate 12 from sliding and/or moving and to obtain a complete adhesion efficiency.

Alternatively, the outer side of the water field box 1 can be finished by using the mortar 31 without the tiles 32. In this case, it is better to work the finishing process after completely assembling the opening/closing plate 12 and the opening plate 21 into the case 2.

~~FIG. 3a is an enlarged view of 'A' portion in FIG. 2 and represents that the flexible hose 9 is securely coupled with the socket 22 fitted into the opening plate 21 at the outlet thereof through the connector 11.~~

~~As shown in Figures, the front end of the connector 11 is engaged in the socket 22 and coupled by the nut 10 and the socket 22 is also coupled to the opening plate 21 through the nut 20 within the flange member 14.~~

~~In addition to, inside one part of the opening plate 21 faced to the flange member 14 of the opening/closing plate 12, located is a packing member 35 made of such as rubber material to greatly increase coupling strength of the opening plate 21 to the flange 14 as possible to the outside water tap 33.~~

The soft pipe 34, which is the cold or hot water pipeline that leads to the outside, is connected to a distributor (not shown), which is installed in a retaining wall or a masonry wall of each house. Furthermore, the soft pipe 34 is surrounded by the bellows pipe 8 and extends into the water service box 1 through the floor or the wall.

15 The flexible hose 9 is coupled to the openable plate 21 at an outlet thereof and is connected to the water tap 33, through which cold or hot water is finally discharged.

As described above, the openable plate 21 is fastened to the rim part 14 of the cover plate 12. In practice, when constructing the water service box 1, mortar 31 is applied to the front surface of the cover plate 12 after the cover plate 12 is coupled to the case 2 using locking units 18. Thereafter, tiles are attached to the mortar 31. The openable plate 21 is then coupled to the rim part 14, thus completing the construction process.

25 Herein, on the top side of the cover plate 12, a desired number of frictional protrusions 19, each having an appropriate size, is provided, so that mortar can be securely applied to the front surface of the cover plate 12 without moving, that is, without slipping down.

30 Alternatively, the outer surface of the water service box 1 may be finished by using the mortar 31 without the tiles 32. In this case, it is better to work the finishing process after completely assembling the cover plate 12 and the openable plate 21 with the case 2.

FIG. 3 is an enlarged view of a circled portion A of FIG 2 and shows that the flexible hose 9 is securely coupled with the reducing socket 22 fitted into the openable plate 21 at the outlet thereof through the connector 11.

As shown in the drawings, the front end of each connector 11 is fitted into each 5 reducing socket 22 and coupled by the nut 10. Each reducing socket 22 is also coupled to the openable plate 21 using the nut 20 in the rim part 14.

Furthermore, a packing member 35, made of material such as rubber, is provided on contact surfaces between the openable plate 21 and the rim part 14 of the cover plate 12, thus increasing the coupling force of the openable plate 21 to the rim part 14.

10 Returning to FIG. 3a, the flexible hose 9 of the present invention has a general form of the hose, which comprises an outer surface 37 having improved flexibility and bending ability and covered with specific stainless yarns 36 and a coil spring 38 inside to prevent the hose from being bent. 3, the flexible hose 9 of the present invention has the general form of a hose comprising an outer surface 37 that has improved flexibility and 15 bendability and is covered with stainless yarn 36, and in which a coil spring 38 is installed, thus preventing the hose from breaking.

20 FIG. 3b illustrates alternative example of the flexible hose mounted on the water field box according to the present invention, which comprises a coil spring 38' on outer side of the flexible hose 9' already covered by the stainless yarns 36', compared to the above example of FIG. 3a.

FIG. 4 illustrates the water field box 1 of the present invention connected with the socket 22.

Such socket 22 is a coupler including a main body and two circular portions having larger and smaller 40 and 39. The socket 22 has a hook groove 42 at a part of top edge 41 thereof.

Therefore, the hook groove 42 of the socket 22 is engaged with the threshold 24 formed around the socket inserting port 23 of the opening plate 21. When the larger circular portion 40 of the socket 22 is coupled with the connector 11 of the flexible hose 9 as it is fitted into the socket inserting port 23, the larger circular portion 40 is fixed to rear side of the opening plate 21 by the nut 20 and, the nut 10 across the flexible hose 9

is fitted into the smaller circular portion 39 of the socket 22 as the front end of the connector 11 of the flexible hose 9 is faced to the smaller circular portion 39 of the socket 22.

As a result, the flexible hose 9 can be rigidly engaged with the socket 22 when the larger circular portion 40 of the socket 22 is fitted into the socket inserting port 23 of the opening plate 21. More particularly, since the threshold 24 is fitted into the hook groove(42) of the socket 22, it is possible to prevent the socket 22 from undesirably moving or idling and to attain a complete connection between the socket 22 and the water field when the connection pipe(29) is fitted and coupled to the socket 22 to joint the water field 33 to the socket 22.

As described above, the water field box 1 according to the present invention comprises the case 2 built with the flexible hose 9 to joint the soft duct 34 and the water field 33 and the opening/closing plate 12 to open/close the hose; wherein the opening/closing plate 12 is formed with the repair hole 13 to allow opening/closing the plate 12 by the opening plate 21 having the socket having different diameters 22 coupled with the front end of the flexible hose 9, whereby the water field box 1 of the present invention accomplishes a convenience of repairing work for the water field box 1 that it requires only the opening plate 21 to be opened, without a need of fully opening the opening/closing plate 12. 4.4 illustrates an alternative example of the flexible hose mounted in the water service box according to the present invention. In this case, unlike the above example of FIG. 3, a coil spring 38' is provided on an outer surface of a flexible hose 9' covered with stainless yarn 36'.

FIG. 5 is a view showing the mounting structure of the reducing socket 22 to the water service box 1 of the present invention.

The reducing socket 22 is a coupler, which is configured into a single body and includes a small diameter part 39 and a large diameter part 40. The reducing socket 22 has a hook notch 42 at a predetermined position on an upper edge 41 thereof.

Therefore, in order to connect the reducing sockets 47 to the flexible hoses 45, the small diameter part 39 and the large diameter part 40 of the reducing socket 22 are inserted into the socket insertion port 23 of the openable plate 21, such that the stop protrusion 24, which is provided adjacent to the socket insertion port 23 on the openable plate 55, is inserted into the hook notch 42 formed in the reducing socket 22.

Thereafter, the nut 20 is tightened to the large diameter part 40 on the rear surface of the openable plate 21. Subsequently, while the end of the connector 11 of the flexible hose 9 is brought into contact with the small diameter part 39, another nut 10, which is fitted over the flexible hose 9, is tightened to the small diameter part 39 of the reducing socket 22.

As a result, the flexible hose 9 is securely coupled to the reducing socket 22, the large diameter part 40 of which is fitted into the socket insertion port 23 of the openable plate 21. More particularly, since the stop protrusion 24 is fitted into the hook notch 42 of the reducing socket 22, even when a connection pipe 29 is coupled to the reducing socket 22 to join the water tap 33 to the socket 22, the reducing socket 47 is prevented from undesirably moving. Thereby, reliable connection between the reducing socket 22 and the water tap can be realized.

As described above, the water service box 1 according to the present invention comprises the case 2, which has therein the flexible hose 9 that couples the soft pipe 34 to the water tap 33, and the cover plate 12 which openably close the case 2. The repair hole 13 is formed through the cover plate 12. The openable plate 21, to which the reducing sockets 22 coupled to the respective flexible hoses 9 are mounted, is removably coupled to the cover plate 12. Therefore, the water service box 1 of the present invention makes the work of repairing the water service box 1 convenient because it only requires the openable plate 21 to be opened, without the need to fully open the cover plate 12.

Furthermore, when required, the user may put his/her hand into the repair hole 13 formed in the cover plate 12 and conduct the operation while directly checking the internal situation in the water service box 1. To repair the flexible hose 9 or to replace the soft pipe 34, which is the cold or hot water pipeline placed in the bellows pipe 8, with a new one, the user releases the joint of the distributor side and, subsequently, puts his/her hand into the repair hole 13 and pulls the flexible hose 9 outwards. Then, it is easily extracted outside from the water service box 1. As such, the present invention makes it possible for a user to easily conduct the repair or replacement process.

Meanwhile, FIG. 6 represents the usage of the water service box 1 according to the

present invention. Referring to the drawing, the bellows pipe 8, which covers the soft pipe 34 which is a cold or hot water pipeline, is connected to the water service box 1 through the floor and the wall 30 in the distributor side. Furthermore, a water tap 33 such as a faucet is provided outside the water service box 1, such that it may be conveniently used.

The foregoing description of the preferred embodiments of this invention has been presented for the purposes of illustration and description. Obvious modifications or variations are possible in light of the above teaching. All such modifications and variations are within the scope of the present invention as determined by the appended claims when interpreted in accordance with the breadth to which they are fairly, legally, and equitably entitled.

Industrial Applicability

Further, the present invention has advantages that the worker can directly monitor interior condition of the water field box 1 during the work and, when the flexible hose should be repaired or the soft duct 34 in the bellow pipe 8, as the cold/hot water pipeline, should be replaced by a new one, the repair and/or the replacement work can be conveniently conducted by firstly releasing a coupled part located in the distribution device side, then, putting a hand into the repair hole 13 and pulling the flexible hose 9 to easily draw the flexible hose 9 and/or the soft duct 34 out from the water field box 1.

Alternatively, referring to FIG. 5 which represents the usage of the water field box 1 to be hidden in the wall according to the present invention, the bellow pipe 8 enclosing the soft duct 34 as the cold/hot water pipeline to protect it is connected to the water field box 1 through the floor and the wall 30 in the distribution device side and, outside the water field box 1, the water field 33 such as water tap is jointed to conveniently use the water field box 1. As described above, in a built-in wall water service box of the present invention, a flexible hose is coupled at a first end thereof to a soft pipe, covered with a bellows pipe, through a reducing socket and is coupled at a second end thereof to a water tap. A plurality of frictional protrusions is provided on a cover plate, and a repair hole is formed at a predetermined position through the cover plate. Furthermore, a rim part

is provided around the repair hole, so that an openable plate is removably coupled to the rim part. Another reducing socket, to which a connection pipe of the water tap is coupled, is inserted into a socket insertion port of the openable plate and is coupled to the openable plate using a stop protrusion of the openable plate. As well, the reducing socket coupled to the water tap is integrally coupled to the flexible hose. Therefore, the present invention enables convenient assembly and disassembly of the water service box, compared to a conventional water service box in which only pipes are installed. Particularly, a user can directly inspect the inner condition of the water service box by putting his/her hands into the water service box through the repair opening. Thus, the present invention makes it possible for a user to easily judge the condition in the interior of the water service box and easily repair it. After such work is completed, the water service box is simply finished with the openable plate.

What is Claimed is

1. A ~~water field box 1 including a case 2 having a flexible hose 9 for connecting a soft duct 34 and a water field 33 inside, and a plate 12 for opening/closing the case 2; wherein the flexible hose 9 is coupled to the soft duct 34 protected by a flexible bellow pipe 8 through a socket 6 having different diameters at one built-in wall water service box (1), comprising: a case (2) having a flexible hose (9), which couples a soft pipe (34) to a water tap (33); and a cover plate (12) to openably close the case (2), wherein the flexible hose (9) is coupled at a first end thereof to the soft pipe (34), which is covered with a bellows pipe (8), using a first reducing socket (6), the flexible hose (9) being coupled at a second end thereof to the water tap (33),~~
~~end and also coupled to the water field 33 at the other end thereof, the opening/closing plate 12~~
~~the cover plate (12) has a frictional protrusion 19 and a repair hole 13, and a flange member 14 around outline of the hole to be opened/closed by an opening plate 21, the socket 22 having different diameters is for inserting and fitting a connection pipe (19) thereon and a repair hole (13) therein, with a rim part (14) provided on the cover plate (12) around an edge of the repair hole (13), so that an openable plate (21) is removably coupled to the rim part (14), and~~
~~29 of the water field 33 and coupled to the opening plate 21 through a socket inserting port 23 and a threshold 24, both being formed on a part of the opening plate 21, and, at the same time, coupled and integrated with the flexible hose 9.~~
~~a second reducing socket (22), which is coupled to a connection pipe (29) of the water tap (33), is inserted into a socket insertion port (23), which is formed at a predetermined position through the openable plate (21), and maintains a position thereof using a stop protrusion (24), which is provided at a predetermined position on the openable plate (21), the second reducing socket (22) being coupled to the second end of the flexible hose (9).~~
2. The ~~water field box 1~~
~~service box (1)~~ as claimed in claim 1, wherein the flexible hose 9 includes both of coil springs 38 and 38'(9) comprises: stainless yarn (36)

or (36'); and a coil spring (38) or (38') provided inside or outside the stainless yarns 36 and 36'.(36) or (36').

Abstract

The present invention provides a water field box 1 including a case 2 having a flexible hose 9 for connecting a soft duct 34 and a water field 33 inside, and a plate 12 for opening/closing the case 2; wherein the flexible hose 9 is coupled to the soft duct 34 protected by a flexible bellow pipe 8 through a socket 6 having built-in wall water service box (1). The wall water service box (1) of the present invention includes a case (2), in which a flexible hose (9) is provided, and a cover plate (12) which openably closes the case (2). The flexible hose (9) is coupled at a first end thereof to the soft pipe (34) different diameters at one end and also coupled to the water field 33 at the other end thereof, the opening/closing plate 12 has a frictional protrusion 19 and a repair hole 13, and a flange member 14 around outline of the hole to be opened/closed by an opening plate 21, the socket 22 having different diameters is for inserting and fitting a connection pipe 29 of the water field 33 and coupled to the opening plate 21 through a socket inserting port 23 and a threshold 24, both being formed on a part of the opening plate 21, and, at the same time, coupled and integrated with the flexible hose 9.

The water field box 1 according to the present invention has advantages that the water field box can be easily assembled and disassembled, more particularly, the inner condition of the water field box 1 can be directly monitored during the work by putting the hand of the worker into the repair hole 13 when it requires identification of the inner condition or repair of the water field box and, in addition to, to achieve a clean and better appearance of the water field box by covering the opening plate 21.

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using a reducing socket (6) and is coupled at a second end thereof to the water tap (33). The cover plate (12) has a repair hole (13) therein, and a rim part (14) is provided around an edge of the repair hole (13), so that an openable plate (21) is removably coupled to the rim part (14). Another reducing socket (22), which is coupled to the water tap (33), is inserted into a socket insertion port (23), which is formed through the openable plate (21). The reducing socket (22) is coupled to the second end of the flexible hose (9).

Application Number: 10/533,802

Title: BUILT-IN WALL WATER SERVICE BOX

(as amended)

Inventor: Yeong-Chun LEE

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FIG. 6

